Emission Source Modification Form

Department/Division: *C-AD* **Building Number:** *1006*

Permit Identification No. (if applicable):
Brief Description of Modifications to Equipment/Operation:
STAR Experiment Run'07 for December, 2006 through June, 2007(approximately 31 weeks) using detectors. Gasses in the detectors are as follows:

TPC: P10 (90% Argon, 10% Methane)
1 volume purge of TPC = 50,000 l @120 l/min, vented to stack.
Normal Recirculating Flow = 560 lpm, ~14 lpm vented to stack.
Argon
5 volume purges/run (i.e. year), 250,000 l @ 120 lpm, vented to stack.
Nitrogen
Insulating gap gas = 10 lpm, vented to stack.
Various systems = 50 lpm, vented to experimental hall
Exterior vent stack located on the east wall of the STAR assembly building with the vent exit above the level of the berm retaining wall.

FTPC: 50% Argon/50% Carbon dioxide
50 – 100 l/hr. in purge mode, 100 l/hr flow in recirculation mode with ~20 l/hr vented to gas mixing room.

SMD: 90% Argon/10% Carbon dioxide at low flow and atm. pressure
Total gas volume ~120,000 cm3
Nominal flow rate 1200 cm3/min., vented outside of magnet through a system of bubblers to experimental hall.

PMD (Photon Multiplicity Detector): 70% Argon/30% Carbon dioxide
A single pass gas system with a flow rate of 50 l/hr exhausted to the gas mixing room.

TOFr (Multigap Resistive Plate Time of Flight Detector) & MTD (Muon test detector):
Freon R134a 90%, Isobutane 5%, SF6 5%
Nominal flow rates for the three gasses are: R134a: 63 cm3/min., Isobutane: 3.5 cm3/min., SF6: 0-3.5 cm3/min. the return gas from the detector will be vented outside the gas mixing room through a stack. Currently there is a question as to the benefit of SF6 and its possible effects on the detector and it may only be used towards the end of the run.

Date of Proposed Modifications to Equipment or Operation: *12/01/06 through 06/30/07*
Identify Changes to the Following (as applicable)

1. Maximum number of hours per day equipment/operation will be used: *24*

2. Maximum number of days per year equipment/operation will be used: *217*

3. Materials/Chemicals to be used	**Estimated Quantity (Volume or Weight/Unit Time)**
P10 Ar-Methane (90/10)	840 l/hr
N2	3600 l/hr
Ar-CO2 (50/50)	20 l/hr
Ar-CO2 (90/10)	72 l/hr

Ar-CO2 (70/30)	50 l/hr
R134a	3.8 l/hr
Isobutane	0.21 l/hr
SF6	0 – 0.21 l/hr

Are New Material Safety Data Sheets (MSDS) attached? Yes ___ No _X_
Describe Changes to Emissions Control Devices: _____None_____

Completed By: Melvin Van Essendelft **Date:** xx/xx/06

Return Completed Forms to the Environmental Subject Matter Expert.

EC5020.98